**DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

# WELDING INSPECTION REPORT

**Resident Engineer:** Siegenthaler, Peter
**Address:** 333 Burma Road
**City:** Oakland, CA 94607

**Report No:** WIR-017363
**Date Inspected:** 11-Oct-2010

**Project Name:** SAS Superstructure
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV
**Contractor:** American Bridge/Fluor Enterprises, a JV

**OSM Arrival Time:** 630
**OSM Departure Time:** 1500
**Location:** Job Site

**CWI Name:** See below

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|---|---|---|---|---|---|---|---|
| **Inspected CWI report:** | ☑ Yes | ☐ No | ☐ N/A | **CWI Present:** | ☑ Yes | ☐ No | |
| **Electrode to specification:** | ☑ Yes | ☐ No | ☐ N/A | **Rod Oven in Use:** | ☑ Yes | ☐ No | ☐ N/A |
| **Qualified Welders:** | ☑ Yes | ☐ No | ☐ N/A | **Weld Procedures Followed:** | ☑ Yes | ☐ No | ☐ N/A |
| **Approved Drawings:** | ☑ Yes | ☐ No | ☐ N/A | **Verified Joint Fit-up:** | ☑ Yes | ☐ No | ☐ N/A |
| | | | | **Approved WPS:** | ☑ Yes | ☐ No | ☐ N/A |
| | | | | **Delayed / Cancelled:** | ☐ Yes | ☑ No | ☐ N/A |

**Bridge No:** 34-0006
**Component:** SAS OBG

**Summary of Items Observed:**

The Quality Assurance (QA) Inspector, Rick Bettencourt was on site at the job site between the times noted above. The QA Inspector was on site to randomly observe the in process welding and inspection of the weld joints identified as 7W/8W-A and hole restoration, and the following observations were made:

2E-pp13.5-E2-SW Access Hole Restoration

The QA Inspector randomly observed the American Bridge/Fluor (ABF) welder Wai Kitlai setting up to continue performing the shielded metal arc welding SMAW cover passes. The QA Inspector previously performed random visual testing and dimensional verification of the bevel angle and root opening of the above identified fit up. The QA Inspector randomly observed the fit up appeared to be in general compliance with ABF-WPS-D1.5-1030. The QA Inspector randomly observed the SE QC Inspector Patrick Swain was on site monitoring the in process welding. The QA Inspector randomly observed the SMAW parameters were 128 Amps while utilizing 1/8” E7018 low hydrogen electrodes. The QA Inspector noted the SMAW parameters appeared to be in general compliance with the contract requirements. The QA Inspector randomly observed the ABF welder continue to perform the SMAW cover pass pick up areas at the above identified location. The QA Inspector noted the SMAW cover pass was completed and the ABF welder was performing additional welding of areas that required additional weld material.

7W/8W-A1-A5

Upon the arrival of the QA Inspector in the am it was observed the above identified weld joint was fit up with the approved temporary attachments or fit up gear in place. The QA Inspector randomly observed the ABF welders identified as Xiao Jian Wan and Hua Qiang Hwang began performing the FCAW full length tack weld. The QA

Inspector randomly observed the Smith Emery (SE) Quality Control (QC) Inspector Tony Sherwood was on site monitoring the in process FCAW tack welding. The QA Inspector performed a random visual testing verification of the previous areas noted to have unacceptable planar off set. In addition the QA Inspector randomly verified locations where no previous off set was noted. After the random dimensional verification, it was noted by the QA Inspector there did not appear to be any significant change in the dimensional values previously noted. The QA Inspector randomly observed and noted the FCAW parameters for both of the above identified ABF welders and they were; 230 Amps, 23.5 Volts and a travel speed of 350mm/min. The QA Inspector randomly observed the full length tack weld was approximately 50% completed as 1000. The QA Inspector noted the ABF welders had performed shielded metal arc welding in the areas where the gaps at the steel backing exceeded 2mm and required approval to weld. The QA Inspector noted the approval to weld the areas was granted on the previous day shift. The QA Inspector randomly observed the ABF welder Hua Qiang Huang begin performing SMAW of the areas where the gaps exceeded 2mm. The QA Inspector noted the full length tack weld was nearly completed at the end of the QA Inspectors shift. The ABF welding Superintendent Dan Ieraci informed the QA Inspector the SAW root pass would be performed would be started on Tuesday afternoon or Wednesday morning.

In addition to the dimensional verification the QA Inspector randomly observed an area of the transverse weld joint approximately 400mm in length that appeared to be distorted or warped. The QA Inspector randomly observed the ABF Welding Superintendent Dan Ieraci removing the induction heating blanket. Mr. Ieraci informed the QA Inspector the blanket must have malfunctioned (see summary of conversation). The QA Inspector determined the top deck plate was approximately 375°F at the time of the QA Inspectors arrival. The QA Inspector measured the temperature with SE QC Inspector calibrated temperature indicating laser. The QA Inspector randomly performed dimensional measurements of the distorted area and noted it appeared to deflect approximately 8-9mm. The QA Inspector observed the inorganic zinc coating on the deck plate appeared to had been burned due to excessive heat. In addition the QA Inspector observed the induction heating blanket and noted it also appeared to had been burned up and or destroyed (pictured below).

The QA Inspector spent the remainder of the shift updating and all production and NDT tracking logs for future reference.

**Summary of Conversations:**

Mr. Ieraci informed the QA Inspector the induction heating blanket must have overheated and malfunctioned. Mr. Ieraci did acknowledge the inorganic zinc coating had been discolored due to excessive heat caused by the malfunctioning heat blanket. The QA Inspector pointed the distorted area of the top deck plate to Mr. Ieraci and he (Ieraci) acknowledged the plate warped or deflected do to excessive localized heating. Mr. Ieraci informed the QA Inspector he was unclear what the temperature of the steel was previously, but assured the QA Inspector the induction heating blankets were not capable of reaching temperatures above 400°F. The QA Inspector noted to Mr. Ieraci the induction heating blanket that was removed from the above identified transverse weld joint appeared to have been burned or actually caught fire and it would only appear the blanket reached temperatures greater than 400°F. Mr. Ieraci reiterated to the QA Inspector the induction heat blankets were not capable of reaching temperatures greater that 400°F.

**Comments**

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916)-813-3677, who represents the Office of Structural Materials for your project.

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| **Inspected By:** | Bettencourt,Rick | Quality Assurance Inspector |
| **Reviewed By:** | Levell,Bill | QA Reviewer |